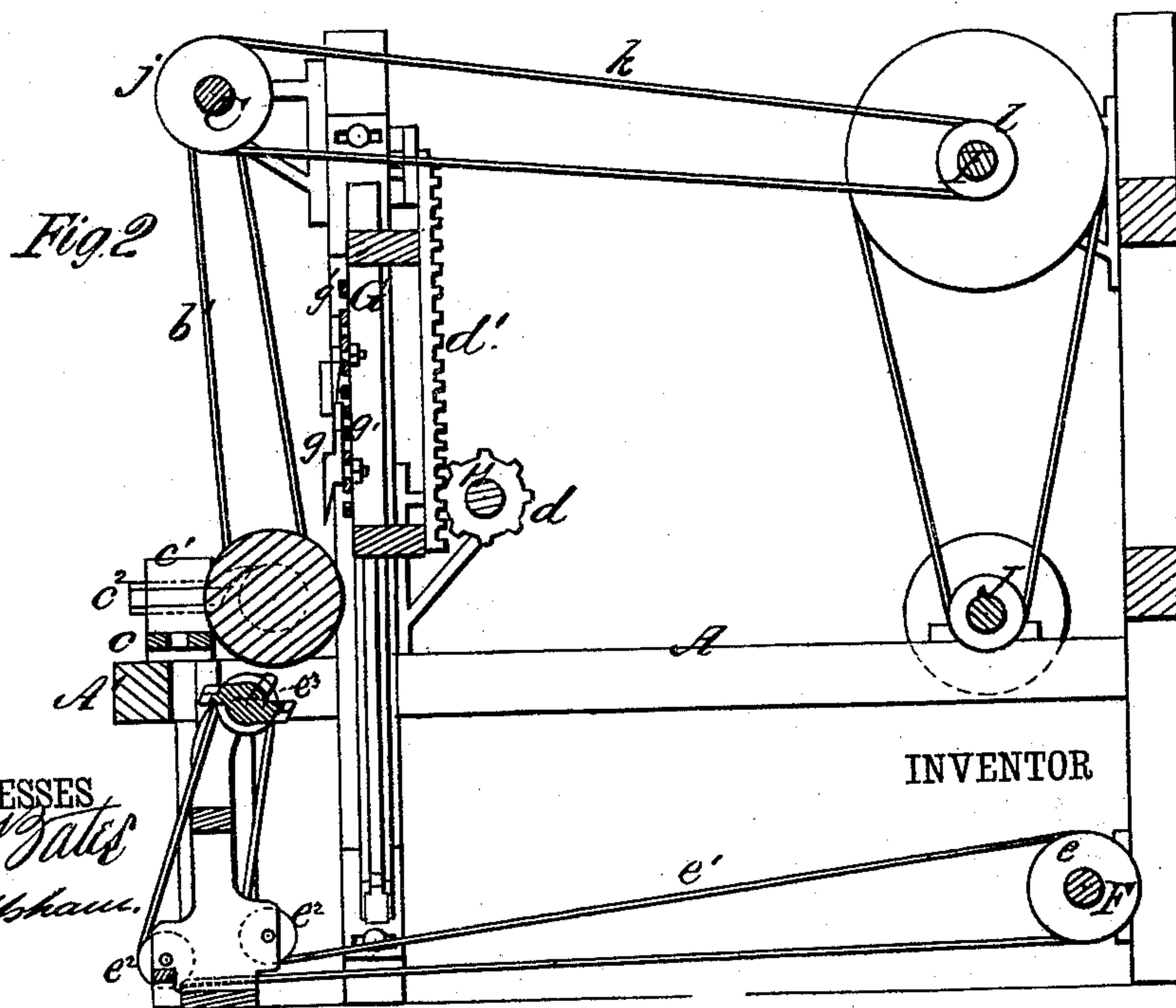
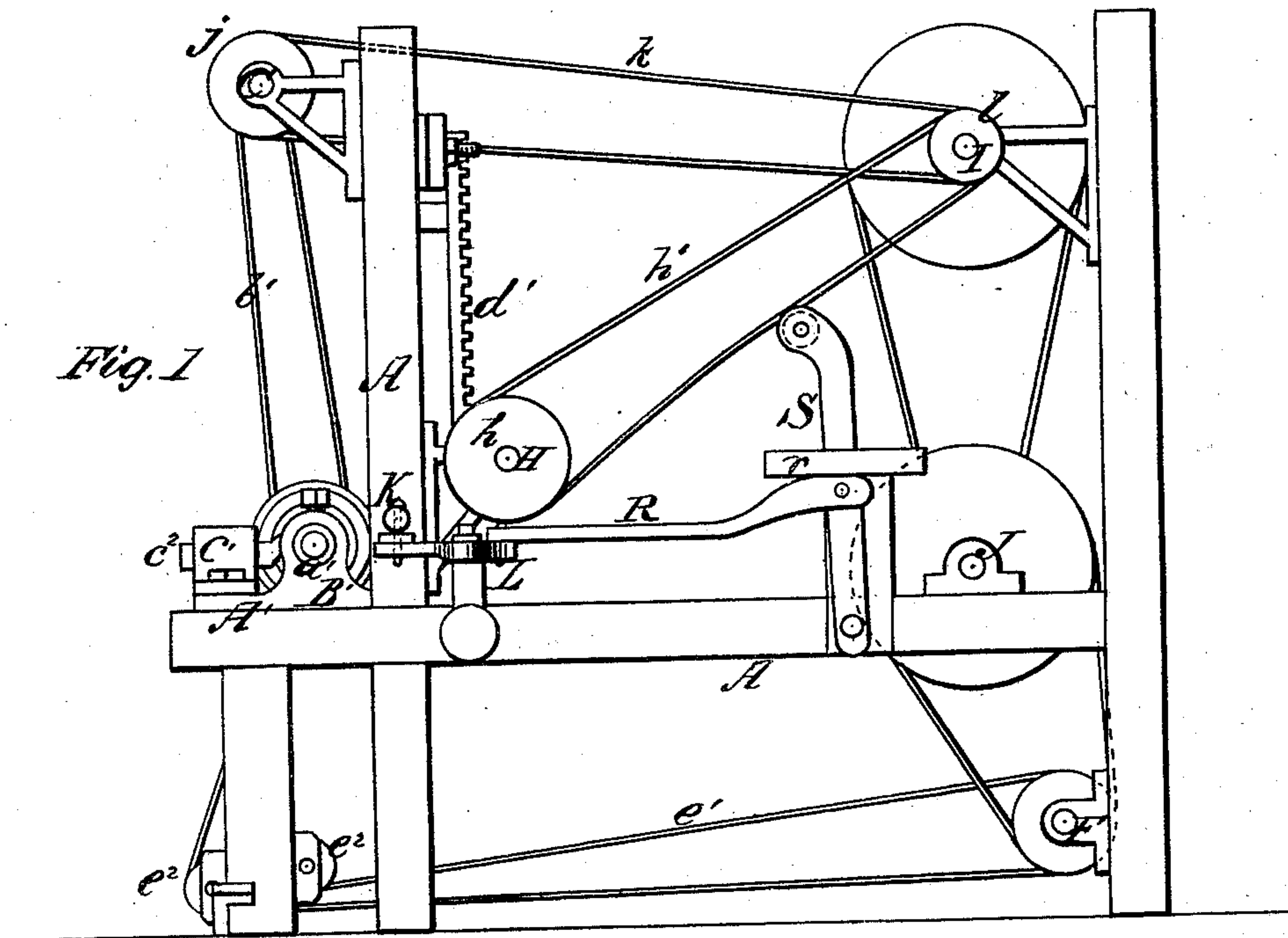


D. KAVANAUGH.
Lathes for Turning Hubs.

No. 156,166.

Patented Oct. 20, 1874.



WITNESSES
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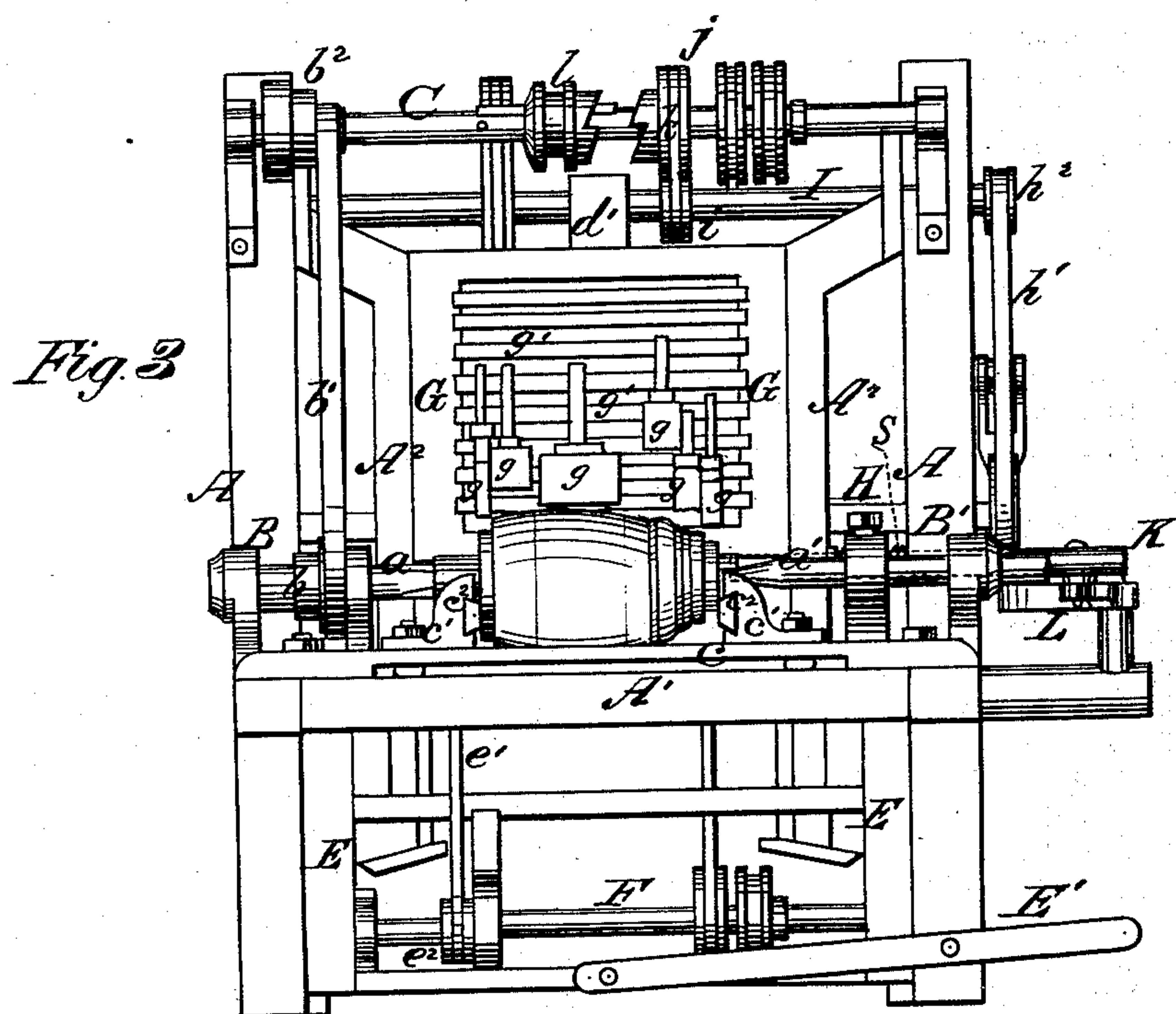
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UNITED STATES PATENT OFFICE.

DANIEL KAVANAUGH, OF CRAIGSVILLE, NEW YORK.

IMPROVEMENT IN LATHES FOR TURNING HUBS.

Specification forming part of Letters Patent No. **156,166**, dated October 20, 1874; application filed July 11, 1874.

To all whom it may concern:

Be it known that I, DANIEL KAVANAUGH, of Craigsville, in the county of Orange and State of New York, have invented a new and valuable Improvement in Lathe for Turning Hubs; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a side view of my hub-boring machine. Fig. 2 is a sectional view of the same, and Fig. 3 is a front view.

This invention has relation to machines which are designed for turning wheel-hubs; and it consists, mainly, in a vertically-movable sash having bits or cutters applied to it, in combination with a vertically-adjustable sash having a rotary cutter and trimming and finishing cutters; also, in novel devices for operating and manipulating the vertically-movable sash, as hereinafter more fully set forth.

In the annexed drawings, A designates the main frame of the machine, and A¹ the working-table at the front of this frame. B B' designate head and tail stocks, the one, B, having applied to it a chuck or hub-holder, *a*, and the other, B', carrying an adjustable back-center, *a'*. On the spindle of the holder *a* a pulley, *b*, is applied, around which a belt, *b*¹, passes, that communicates rotary motion to the holder from a pulley, *b*², on an overhead shaft, C. The two stocks B B' are secured upon the table A¹, and connected together by a slotted bar, *c*, which affords support for two tool-rests, *c*¹ *c*², carrying cutters *c*² *c*², for trimming and finishing the ends of the hubs. D designates a rotary roughing cutter, for preparing the stuff to be acted on by the finishing-cutters, hereinafter explained. This cutter D has its end bearings in a vertically-adjustable sash, E, which is raised by an operator pressing on a treadle, E', and which descends by its own gravity. The cutter D receives rotation from a shaft, F, by means of a large pulley, *e*, a belt, *e*¹, and two small pulleys, *e*², and another pulley, *e*³. After the stuff is confined between the holder *a* and center *a'*; and the work of

roughing or rounding it is completed, it is given the final shape by means of cutters *g*, which are adjustably secured to cross-pieces *g'* on a sash, G. The sash receives vertical movements between two guides, A² A², and this motion is given to it by means of a spur-wheel, *d*, acting on a rack, *d'*. The wheel *d* is keyed on a horizontal shaft, H, on one end of which is a belt-wheel, *h*, around which a belt, *h*¹, passes, that also passes around a belt-pulley, *h*², on a shaft, I. Shaft I receives rotation from a main driving-shaft, J, by means of pulleys and a belt, and this (I) shaft communicates rotary motion to the shaft F by means of pulleys and a belt, shown in Fig. 1. A pulley, *i*, on the shaft I, a pulley, *j*, on the shaft C, and a belt, *k*, are employed for giving rotary motion to the shaft which drives the spindle of the holder *a*. The pulley *j* on shaft C is caused to engage with this shaft by means of a clutch, *l*, by adjusting which pulley *j* can be caused to run fast or loose, as may be required. K designates a bolt, which passes freely through one of the uprights of frame A and through one of the vertical guides A², and which is acted on by a spring. During the descent of the sash G the inner end of the bolt K presses against one edge of this sash, and at the termination of the ascending stroke of the sash G the bolt will be shot beneath the sash. The outer end of bolt K is pivoted to an angular lever, L, which is also pivoted to a connecting-rod, R. The rod R is pivoted to a vertical vibrating arm, S, working in a guide, *r*, and constructed with an upper forked end carrying an anti-friction roller. When the sash G is fully raised and bolt K is shot beneath it by spring *s*, the upper end of arm S will be moved away from belt *h*¹, and by allowing this belt to run loose on its pulleys stop the further ascent of the sash G. During the descent of the sash G the upper end of arm S will press hard against the belt *h*¹ and keep it tight on its pulleys.

What I claim as new, and desire to secure by Letters Patent, is—

1. The spring-bolt K, pivoted to the angular lever L, the connecting-rod R, and the vertical vibrating arm S, working in guide *r*, in combination with the vertically-movable sash G, for the purpose set forth.

2. The combination of the vertically-adjustable sash E, carrying the rotary cutter D, the vertically-movable sash G, with adjustable cutters *g*, and the trimming and finishing cutters *c*², operating substantially in the manner as described.

In testimony that I claim the above I have

hereunto subscribed my name in the presence of two witnesses.

DANIEL KAVANAUGH.

Witnesses:

JAMES BOLAND,

JOHN H. BUCHANAN.